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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,493	11/12/2003	Jeff Andrews	MS1-1373US	7232

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EXAMINER	
NGUYEN, HAU H	

ART UNIT	PAPER NUMBER
2676	

DATE MAILED: 04/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/706,493	ANDREWS, JEFF	
	Examiner	Art Unit	
	Hau H Nguyen	2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/12/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-16, 18-30, 48-49, 51, 56-59 are rejected under 35 U.S.C. 102(e) as being anticipated by Leather et al. (U.S. Patent No. 6,636,214).

Referring to claims 1, 3, 7, 9, 13-15, 22-28, 48, 51, 56-58, Leather et al. teach a method of dynamically reconfiguring a graphics pipeline with a hidden surface removal phase that may be placed at different locations within the pipeline depending on pipeline rendering mode (an arbitrary ordering component). When the pipeline operates in certain rendering modes, the hidden surface removal operation can be performed early in the pipeline--allowing the pipeline to discard obstructed pixels early and avoid wasting its time performing expensive operations on image portions that are obstructed by other portions of the image. For other (e.g., alpha-thresholding-based) rendering modes, the hidden surface removal operation is performed near the end of the pipeline--when the pipeline has developed sufficient additional information to resolve depth comparisons based on such rendering mode (col. 4, lines 11-38) (alpha-blending is operated prior to other components in the rasterization pipeline). As shown in Fig. 5, Leather et al. teach a graphics processor coupled to the host processor 110 to receive graphics commands from main memory 112 (a computer-readable media for holding instructions), a command

processor 200 performs command processing operations 200a that convert attribute types to floating point format, and pass the resulting complete vertex polygon data to graphics pipeline 180 for rendering/rasterization (a stage assembly) (col. 8, lines 51-67, and col. 9, lines 1-8). As also shown in Figs. 4 and 5, the graphics pipelines also comprises texture unit 500 which can perform texturing, fog, and alpha blending (col. 9, lines 48-58) (a rasterization pipeline). Figs. 6 and 7 show the process of reconfiguring the graphics pipeline, wherein the stages of the pipeline is performed without strict order.

In regard to claims 2, 8, and 18, as shown in Fig. 7A, Leather et al. teach the graphics pipeline 118 illustrated as being an actual physical pipe carrying pixels P through the various processing stages of the pipeline (col. 11, lines 66-67, and col. 12, lines 1-2).

In regard to claims 4-6, 10-12, 19-21, and 49, Leather et al. teach a graphics pipeline has first and second alternate rendering modes and includes a texturing stage having an input and an output. A reconfiguration arrangement (arbitrary ordering component) selectively places a hidden surface removal stage alternately at the input or at the output of the texturing stage depending upon the graphics pipeline rendering mode (col. 4, lines 25-31) (receiving at the input, data from previous stage, and transmitting at the output, data to the next stage).

As for claim 16, as shown in Figs. 6 and 7, Leather et al. teach the ordering of the rasterization pipeline can be programmed by a programmer (col. 12, lines 9-14).

Referring to claims 29 and 30, Leather et al. teach texture processing (500a) including, for example, texture shadows and lighting through the use of projective textures (specular component) (col., lines 39-43). As cited above, Leather et al. teach the rasterization pipeline also includes alpha blending.

In regard to claim 59, as cited above, Leather et al. teach the rasterization pipeline comprising fog component, alpha blending component, texture component, and specular component, and alpha blending can be performed before other component of the rasterization pipeline.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 17, 31-47, 50, 52-55, and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leather et al. (U.S. Patent No. 6,636,214).

Referring to claims 17, 31-35, 38-43, 46-47, 50, 52-53, 55, and 60, as cited above, Leather et al. teach a stage assembly comprising a plurality of stages configured to receive data to be processed by a rasterization pipeline, an arbitrary ordering component, and a rasterization pipeline comprising a plurality of components to process data from the stage assembly. As shown in Fig. 9, Leather et al. further teach an example implementation of z Compare/Depth Buffering Logic, which comprises a series of multiplexers 776 (a first group of multiplexers) that switch alternatively between the output of the edge and z rasterizer 700b and the output of texture environment unit 600a (individual inputs) (col. 13, lines 13-25), and outputs to the next stage of the rasterization pipeline at Zout(95:0) (individual outputs). Thus, the multiplexers 776 as taught by Leather et al. have the inputs for receiving data from different stages of the pipeline and routing data to the appropriate stage depending upon the rendering mode, and the

multiplexers can arbitrate the inputs by a control register as shown in Fig. 10. Therefore, it would have been obvious to one skilled in the art to utilize the method as taught by Leather et al. such that other stages of the pipeline can be implemented with a second group of multiplexers (similar to the first group) having inputs receiving data from previous stage (rasterization pipeline), and outputting the data to the stage assembly, since the reconfiguration arrangement as cited above can alter the order of the graphics pipeline during rendering time. The advantage of having multiplexers at inputs and outputs in the manner as cited above is to provide the flexibility of controlling the flow of the graphics pipeline.

In regard to claims 36 and 44, as cited above, Leather et al. teach the data received is pixel data.

As for claims 37, 45, and 54, as also cited above, Leather et al. teach the alpha blending can be performed prior to other component in the pipeline.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892 form.

Fox et al. (U.S. Patent No. 6,532,009) disclose a mechanism that allows different stages in the graphics pipeline to be turned on and turned off.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hau H. Nguyen whose telephone number is: 571-272-7787. The examiner can normally be reached on MON-FRI from 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D. C. 20231

or faxed to:

(703) 872-9306 (for Technology Center 2600 only)

Hand-delivered response should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (571)-272-2600.

H. Nguyen

04/21/2005

Matthew C. Bella

MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600